

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT).

(19) World Intellectual Property Organization  
International Bureau



10/517751



(43) International Publication Date  
24 December 2003 (24.12.2003)

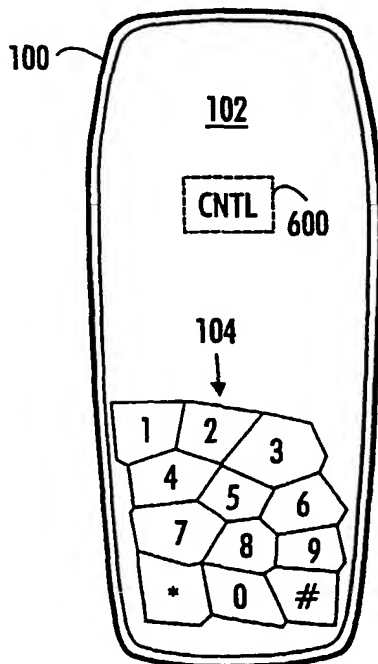
PCT

(10) International Publication Number  
WO 03/107168 A1

- (51) International Patent Classification<sup>7</sup>: G06F 3/023, 3/033, G06K 9/00
- (21) International Application Number: PCT/FI03/00470
- (22) International Filing Date: 12 June 2003 (12.06.2003)
- (25) Filing Language: Finnish
- (26) Publication Language: English
- (30) Priority Data:  
20021162 14 June 2002 (14.06.2002) FI
- (71) Applicant (for all designated States except US): NOKIA CORPORATION [FI/FI]; Keilalahdentie 4, FIN-02150 Espoo (FI).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): HIMBERG, Johan [FI/FI]; Stenbäckinkatu 2 C 72, FIN-00250 Helsinki (FI). MÄNTYJÄRVI, Jani [FI/FI]; Lumilinnantie 17 C 17, FIN-90630 Oulu (FI). HÄKKILÄ, Jonna [FI/FI]; Ankkatie 11, FIN-85100 Kalajoki (FI). KESKI-JASKARI, Turo [FI/FI]; Lehdesniityntie 3 E 72, FIN-00340 Helsinki (FI). TAKALA, Roope [FI/FI]; Sateentie 2 A 31, FIN-02100 Espoo (FI).
- (74) Agent: KOLSTER OY AB; Iso Roobertinkatu 23, P.O. Box 148, FIN-00121 Helsinki (FI).
- (81) Designated States (national): AE, AG, AL, AM, AT (utility model), AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ (utility model), CZ, DE (utility model), DE, DK (utility model), DK, DM, DZ, EC, EE (utility model), EE, ES, FI (utility model), FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK (utility model), SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO utility model (GH), ARIPO patent (GH), ARIPO utility model (GM), ARIPO patent (GM), ARIPO utility model (KE), ARIPO patent (KE), ARIPO utility model (LS), ARIPO patent (LS), ARIPO utility model (MW), ARIPO patent (MW), ARIPO utility model (MZ), ARIPO patent (MZ), ARIPO utility model (SD), ARIPO patent (SD), ARIPO utility model (SL), ARIPO patent (SL), ARIPO utility model (SZ), ARIPO patent (SZ), ARIPO utility model (TZ), ARIPO patent (TZ), ARIPO utility model (UG), ARIPO patent (UG), ARIPO utility model (ZM), ARIPO patent (ZM), ARIPO utility model (ZW), ARIPO patent (ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI,

[Continued on next page]

(54) Title: ELECTRONIC DEVICE AND METHOD OF MANAGING ITS KEYBOARD



(57) Abstract: The invention relates to an electronic device and a method of managing a virtual keyboard of the electronic device. The device comprises a touch pad (106), a processing unit (600) and a feedback unit (612), which provides tactile feedback unit (612) for the user. The processing unit (600) is configured to determine a virtual keyboard (104) for the touch pad (106) and a tactile appearance of the keyboard (104), receive information generated by the pressing of a keyboard (104) key and identify the key that was pressed on the basis of the information. The processing unit (600) is further configured to collect information on the key presses and carry out an analysis of them, and re-determine the tactile appearance of the keyboard (104) on the basis of the collected information and the analysis carried out so as to make the keyboard more ergonomic for the user, which makes it easier to use the keyboard (104) and/or the pressing of a wrong key less likely.

WO 03/107168 A1



SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Published:**

— *with international search report*

**Declaration under Rule 4.17:**

— *of inventorship (Rule 4.17(iv)) for US only*

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*